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ABSTRACT

The Cheyenne Mountain Schools, a small suburban school district in Colcrado Springs, Colorado, used the National Assessment of Educational Progress (NAEP) data to compare the mathematics achievement of its nine-year-old pupils with pupils of the same age living in similar communities across the United States. Working closely with NAEP personnel, school district representatives chose 65 NAEP exercises to be used in the assessment. District personnel reprinted the exercises, duplicated the NAEP audio tapes of test instructions, and relicated NAEP scoring and tabulation materials. A volunteer group of 12 mothers from the district hand-scored and tabulated the results. The resulting data were compared to NAEP data for nine-year-olds from communities classified as "high metro," large urban areas where a high proportion of adults are in professional or managerial positions. Among nine-year-olds in the Cheyenne Mountain Schools: (1) Boys performed significantly higher than their national counterparts on 13 of the 65 NAEP exercises, and significantly lower on 13; (2) girls performed significantly higher on 16 items, and significantly lower on 21; and (3) the combined performance of boys and girls was significantly higher cn 14 exercises, and significantly lower on 15. (Author/MV)

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HOW CAN LOCAL SCHOOL DISTRICTS

USE

NAEP DATA

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Dr. Tom B. McCord
at the AERA Convention
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I was asked to discuss briefly how local school districts may work cooperatively with the National Assessment of Educational Progress (NAEP). In order to do so, it will be necessary for me to tell you about a project that was recently undertaken and completed. I always hesitate to take this approach, since it appears that some self-appointed expert is telling you exactly how to do things. I assure you that isn't the case today. Please bear with me, however, if I should overuse such terms as "I", "We", "NAEP", "Cheyenne Mountain", etc.

I was told some time ago that the best speeches have a good BEGINNING and a good ENDING, and the two should be kept CLOSE TOGETHER! I'll try to follow that advice, because I believe it. You should understand one thing here at the outset...I am not a philosopher, never have been, and have no plans to be! Nothing against philosophy or philosophers; it's just that my intellect limits me to PRACTICALITY. I cannot throw you a "bunch of stuff", all the while telling you that here is a foolproof method by which you can solve all of your educational problems. I'm in the trenches, like most of you, with the usual amount of pressure and criticism. I shall, however, try to pass along some ideas which have been beneficial to our particular school district.I should mention that as a result of our cooperative project with NAEP, we plan to use data on a continuing basis in the future. I strongly suspect that many of you would be able to effectively use their data in your own programs.

I work in Cheyenne Mountain School District 12, a small suburban district on the southwest edge of Colorado Springs. We enjoy a relatively high per pupil expenditure, low pupil-teacher ratio, and students who come from college oriented homes. We definitely are college preparatory. As in most districts, problems exist. Fortunately, the problem which brought about our relationship with NAEP was a bit easier to live with than many educational problems with which we are confronted. At any rate, it triggered some concern. The problem was this: OUR STUDENTS TRADITIONALLY SCORE HIGH ON STANDARDIZED TESTS, WHEN COMPARED TO THE NATIONAL NORMS.

Two to four grade levels higher as a matter of fact. Good! Great! Why gripe? Maybe we shouldn't complain. On the other hand, it occurred to some of us that our students SHOULD score well on these tests, particularly when the total environment of our students was considered. The question arose: HOW DO OUR STUDENTS "STACK UP" WITH STUDENTS FROM AROUND THE COUNTRY WHOSE EDUCATIONAL CIRUMSTANCES ARE SIMILAR?

I began to look for an answer to the question, although there were several "dead end" and "blind alleys" during the search. It appeared as if we were always comparing apples and oranges when we attempted to compare our students with others.

I had known of National Assessment since their early days but like so many others, I was uncertain as to whether or not they were operating in the best interest of public education. I remember, as a matter of fact, that I was apprehensive about their intentions. At this point, I am very comfortable with the idea that NAEP does have a wealth of experience, expertise, and data which COULD be useful to school administrators. I did not even realize that NAEP was headquartered in Denver, a fact that has certainly proven convenient in recent months. I found out about NAEP's location while in the process of searching for ways by which we could compare student test results.

I stumbled into their place quite innocently, if you will. I told my story to a few people and finally wound up in Wayne Martin's office. The two of us began to put "bits and pieces" together. From that point on, the two of us, with suggestions and assistance from others, proceeded to put together a plan whereby our 9-year old students would be assessed in mathematics and the results then compared with NAEP's "high metro" group. Our students fit nicely into this particular category. We found that NAEP could provide specific information for comparison; i.e., data by geographical region, sex, size and type community, level of parental education, etc. Now, that's just what we had been looking for; an available data

bank which gave us the capability of making our desired comparisons.

Financing is difficult these days, as you know: therefore, we had to come up with ways to keep expenses DOWN. Obviously, the best way to do that was to try a "do-it-yourself" system. We decided to prepare our own exercise booklets...that saves money! We called this startling new process the "MIMEOGRAPH TECHNIQUE". The most unusual aspect of the project was our use of volunteer parents to score the booklets and tabulate results. The plan was essentially set. Now, for administration of the assessment.

Since we are a small school district, our total 9-year old student population was only 120. Seven students, for one reason or another, were not involved in the assessment, thus leaving 113 students to be assessed. Following very closely the procedures used by NAEP in its national assessment procedures, we administered 65 exercises which had been selected for inclusion in the booklet. These were exercises representing each of NAEP's five major math goals. It is important that school district learner objectives be compatible with NAEP's. Ours fit beautifully. We were extremely careful in conducting the entire project in order to keep our statistics "clean". We wanted no room for criticism. NAEP procedure called for a recorded voice to present all instructions and read each exercise in turn to the students, even though all directions were printed in the booklet. So we made the tape, following all "time-lines" established by NAEP. NAEP insists on minimizing the possibility of student misunderstanding; therefore, the necessity of recorded instructions. The assessment was structured so that a specified amount of RESPONSE TIME was allowed after each exercise had been orally presented. Total assessment time was about 55 minutes. Students were great! Very cooperative and even enthusiastically interested in the final results.

What did we do after test administration? If you will recall, I mentioned that volunteer parents were a very important part of the project. I won't say that

the mothers were chosen at random, nor will I say that I "handpicked" them. Since the building principals knew those parents who were willing, capable, and interested in participating in such a project, the selection was left to them. Twelve mothers representing our three elementary schools were assembled after they had volunteered their time. Actually, we weren't biased toward men; however, we made the assumption that most men would not be available during the day!

As you might imagine, NAEP has its own scoring techniques, based upon their years of experience. Wayne Martin, who was initially somewhat skeptical of the "volunteer parent bit", decided that a training session was critical. Neither of us had any idea of the time that would be required to prepare the ladies for their task. Neither were we able to estimate the number of hours or days that would be necessary for scoring and tabulation. The committee of women met with Wayne and me early one morning last February and we simply went to work. In a very relaxed and informal atmosphere the reason underlying the project was explained, a brief introductory film strip depicting NAEP history and capabilities was shown, and more importantly the ladies were given step by step instructions on exactly how to score the test exercises. In a very short period of time, the scorers understood their role in the project and how to score in a consistant and reliable manner. Wayne was extremely pleased with the serious and very effective manner in which the ladies performed. Scoring was "for real" well before noon. Then, they didn't want to stop for lunch. Finally, the ladies were persuaded to take a lunch break, but most returned early and continued scoring. We all were surprised when the scoring process was completed by mid-afternoon. How about this! Twelve volunteers scored over 7,000 exercises -- that's over 600 each. Terrific!! This was done in less than an ordinary working day and it was done at no cost to the district, other than coffee and doughnuts. More importantly WE WERE COMPLETELY SATISFIED WITH THE ACCURACY OF THE SCORING.

Following the scoring session, we then designed forms on which we could tabulate results for key punching. About a week after the scoring session, the same twelve

volunteers returned to hand-tabulate scores on our home-made forms. As mentioned previously, we had no way of accurately estimating the "woman-hours" that would be utilized in the tabulating process. But, again, we were pleasantly surprised. Tabulating took approximately the same amount of time as was required for scoring. By this time, our very dedicated ladies had completed the "nasty" part of the project in much less time than any of us would have guessed, saved the district a significant amount of money, and had become extremely interested in the final results.

The entire process was considered a pilot project to determine whether or not it would produce worthwhile results. Being a pilot project which had some possible implications for NAEP, the key punch and computer time expense was borne by NAEP, (please don't expect that luxury in the future.) Our tab sheets were sent to NAEP and in a relatively short time, printouts were in our hands. Cheyenne Mountain 9-year-olds scored significantly higher on 14 of the 65 exercises and significantly lower on 15 exercises. Boys performed significantly higher than their national counterparts on 13 of the exercises and significantly lower on 13. Girls performed significantly higher on 16 of the 65 exercises, significantly lower on 21.

Two very important questions were answered: (1) Cheyenne Mountain 9-year-old students compared favorably with their nationwide counterparts in mathemactics; and, (2) National Assessment did have the capability of working closely with a small local school district in a relatively inexpensive manner. Beyond these two answers, another important aspect of the project came to light; a number of "doors or avenues" were opened for future consideration. Let me give some examples of ways in which the data may be used:

* First, and basic to the entire idea, students may be compared with others like themselves on each of the items.
* Data is available for comparison by region of the country, size and type of community, sex, grade level, level of parental education, etc.

* Information may be obtained from each building for comparative purposes. (In our case, each principal had prior knowledge of and supported this approach.)
* It is possible to obtain information concerning the students in each classroom: however, in our case we chose to postpone that particular avenue until sometime in the future.
* If exercises are consistant and compatible with district-wide learner objectives, it is a simple matter to pick out program weaknessess, strengths, trends, etc., especially as they relate to specific exercises or groups of related exercises.
* Curriculum change or alteration could be made quickly and effectively after an assessment project such as this.
* You can economize! We estimated that our project COULD have cost a minimum of $5,000 -- it cost us less thant $250.00!
* The FLEXIBILITY is, in my estimation, the single most important feature of our project. You may design your assessment to fit your own special needs, collect data that is important to you, and then decide how you wish to use results in improving your programs.

As in any pilot study, mistakes were made; however, they were minor in nature and may be easily corrected. At this point many of us are excited about future possibilities.

WHAT HAS HAPPENED TO US AS A RESULT OF OUR COOPERATIVE PROJECT WITH NATIONAL ASSESSMENT?

* We recently completed a WRITING ASSESSMENT of approximately 150 thirteen-year-old junior high students. It is being scored at this time.
* We will assess our seventeen-year-old students in math in April.
* Our intentions are to continue on a "cycle basis" and reassess later and also conduct initial assessments in other areas, such as science, reading, social studies, music, art, career and occupational development, etc.

* We deliberately involved teachers on a "non-threatening" basis; therefore, all teachers cooperated and most feel good about future implications for improvement of our instructional programs.
* We will continue to involve as many people as possible and be completely open in reporting results. Our school improvement committee (accountability), faculty, administration and board of education are advised periodically of new assessment projects and progress made on current projects. As a matter of fact, these groups are actively involved as much as possible.
* Finally, there is some excitement over the fact that we expect to do our own COMPUTER WORK beginning with our 17-year-old math assessment this spring. Hopefully, this will be an on-going project for the computer programming students in the high school. We have a teletype terminal which we hook up via telephone lines to a small Data General NOVA Computer and our math department chairman has studied the possibilities and indicates that we have the capability of doing our own work in this area. Furthermore, he is excited about the possibility of further involvement by the students.

We believe that NAEP has something to offer school districts, if those districts have the desire to learn more about their students. I am not saying that NAEP's approach should replace standardized testing. Rather, I believe that the NAEP approach could be used in conjunction with standardized testing programs, thereby giving district personnel an opportunity to look at things in another light. I think it could be a valuable tool in strengthening curricular programs, and a very definite help for teachers in "goal or "objective" oriented situtations.

I have found NAEP personnel, from Roy Forbes, the director, and Wayne Martin, his assistant, down through the ranks to be extremely helpful and courteous. They are not selling expensive programs! On the other hand, their data is for your use and expenses are directly proportionate to how much "do-it-yourself" effort you choose to provide.

I've given you no magic, and very little philosophy, but I hope that the simple project which has been described may be of help to you in your future plans. Neither have I given you any sort of formula which is suited to each of your situations. I do believe however, that there is such flexibility available in working with NAEP that you are free to "pick and choose" and consequently devise a plan of action to fit your own unique needs.

SCHOOL DISTRICTS CAN ACCOMPLISH MANY THINGS WITHOUT A GREAT DEAL OF MONEY, HIGHLY PAID CONSULTANTS OR ELABORATE RESEARCH FACILITIES. PEOPLE IN CHEYENNE MOUNTAIN SCHOOL DISTRICT HAVE PROVEN THIS. It depends upon whether or not someone really cares about "getting it done".

Thank you!